

Louisville Metro Air Pollution Control District

PM_{2.5} Monitoring Report

December 2009

This report summarizes PM_{2.5} data collected by Federal Reference Method (FRM) samplers through December 2009. The data are subject to further quality assurance checks and are not final.

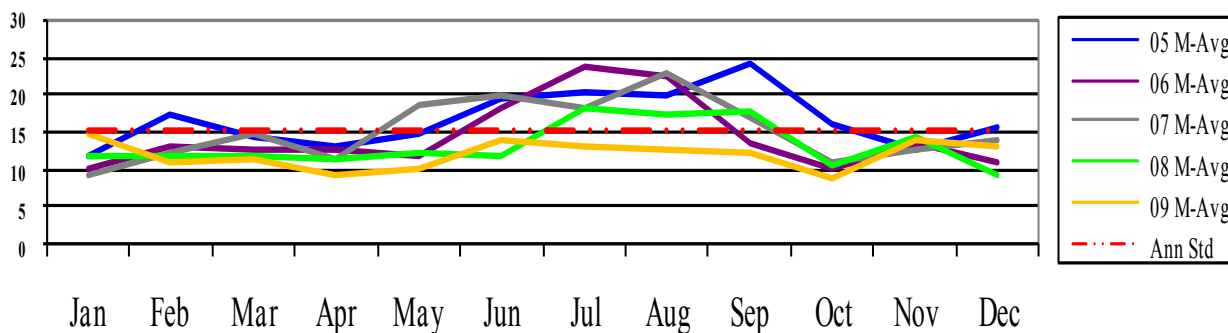
Table 1: PM_{2.5} Monthly Data Summary December (µg/m³)

| <u>Site Name</u> | <u>Daily Maximum Conc. & Date</u> | <u>Daily Minimum Conc. & Date</u> | <u>Sample Recovery</u> | <u>Monthly Average</u> |
|------------------|---|---|----------------------------|----------------------------|
| Southwick | 26.5 (12/22) | 4.5 (12/25) | 97% | 12.8 |
| Wyandotte | 28.3 (12/22) | 4.0 (12/26) | 97% | 13.7 |
| Cannons Lane | 27.2 (12/06) | 5.0 (12/09) | 100% | 12.9 |
| Watson Lane | 24.7 (12/21) | 7.0 (12/27) | 100% | 12.1 |
| Overall | 28.3 (12/22) | 4.0 (12/26) | 99% | 12.9 |

Table 2: PM_{2.5} Monthly Averages Tracking Table for 1999-2009

| Month | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Months >15.0 µg/m ³ |
|----------|------|------|------|------|------|------|------|------|------|------|------|------|--------------------------------------|
| Ann Std | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | |
| 99 M-Avg | 14.7 | 13.8 | 12.4 | 12.7 | 18.1 | 23.4 | 26.6 | 19.5 | 15.6 | 17.4 | 16.1 | 12.6 | 7 |
| 00 M-Avg | 15.8 | 16.4 | 13.4 | 13.6 | 17.1 | 17.7 | 23.5 | 21.2 | 13.3 | 19.7 | 15.6 | 17.1 | 9 |
| 01 M-Avg | 21.9 | 13.9 | 15.2 | 13.3 | 17.7 | 20.5 | 24.6 | 27.4 | 16.1 | 13.8 | 15.8 | 12.4 | 8 |
| 02 M-Avg | 13.1 | 10.0 | 12.3 | 11.4 | 15.9 | 22.3 | 30.4 | 23.8 | 21.7 | 13.2 | 11.8 | 15.6 | 6 |
| 03 M-Avg | 12.2 | 16.3 | 15 | 14.6 | 13.1 | 18.6 | 21.7 | 23 | 17.3 | 12.5 | 12 | 10.6 | 5 |
| 04 M-Avg | 10.5 | 15.7 | 10.1 | 11.3 | 13.4 | 15.9 | 17.1 | 18.4 | 17.6 | 13.8 | 11.1 | 11.1 | 5 |
| 05 M-Avg | 11.7 | 17.1 | 14.3 | 13.1 | 14.9 | 19.6 | 20.2 | 19.8 | 24.1 | 16.1 | 12.6 | 15.5 | 7 |
| 06 M-Avg | 10.3 | 13.0 | 12.5 | 12.6 | 11.9 | 18.1 | 23.9 | 22.5 | 13.6 | 10.1 | 13.6 | 11.1 | 3 |
| 07 M-Avg | 9.3 | 12.2 | 14.9 | 11.2 | 18.4 | 19.9 | 18.3 | 22.8 | 16.9 | 11.1 | 12.5 | 14.1 | 5 |
| 08 M-Avg | 11.8 | 12.0 | 11.9 | 11.6 | 12.1 | 11.8 | 18.1 | 17.1 | 17.6 | 10.6 | 14.3 | 9.4 | 3 |
| 09 M-Avg | 14.6 | 11.1 | 11.3 | 9.3 | 10.3 | 13.9 | 13.1 | 12.6 | 12.1 | 8.9 | 13.8 | 12.9 | 0 |

Chart 1: PM_{2.5} Monthly Averages Trends



National Ambient Air Quality Standards (NAAQS):

National Ambient Air Quality Standards consists of Primary and Secondary Standards. The Primary Standards define levels of air quality which EPA judges are necessary, with an adequate margin of safety, to protect the public health. The Secondary Standards define levels of air quality which EPA judges necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant. For PM_{2.5} the levels of the Primary and Secondary Standards are the same.

Annual Standard:

The annual standard is designed to provide an appropriate level of protection from long-term exposures to PM_{2.5}. Table 3 compares data collected from 2003 through year-to-date 2009 to the Annual National Ambient Air Quality Standard for PM_{2.5}. The Annual National Ambient Air Quality Standard for PM_{2.5} is met when the annual design value is less than or equal to 15.0 µg/m³. The design value is based on 3 consecutive, complete years of air quality data and is calculated by taking the 3-year average of annual means.

Table 3: PM_{2.5} Annual Means and Annual Design Values

| Site Name | Annual Means µg/m ³ | | | | | | | Annual Design Values 2003-2005 | Annual Design Values 2004-2006 | Annual Design Values 2005-2007 | Annual Design Values 2006-2008 | Annual Design Values 2007-2009 |
|---------------|--------------------------------|------|------|------|------|------|-------------------|-----------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|
| | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 ¹ | | | | | |
| Southwick | 16.0 | 14.5 | 16.6 | 15.0 | 15.1 | 13.2 | 12.2 | 15.7 | 15.4 | 15.6 | 14.4 | 13.5 |
| Wyandotte | 15.4 | 14.0 | 16.4 | 15.2 | 14.9 | 13.4 | 12.5 | 15.3 | 15.2 | 15.5 | 14.5 | 13.6 |
| Cannons Lane* | 15.5 | 13.7 | 16.7 | 13.9 | 15.0 | 13.4 | 11.7 | 15.3 | 14.8 | 15.2 | 14.1 | 13.4 |
| Watson Lane | 14.9 | 12.6 | 16.4 | 13.7 | 15.4 | 12.8 | 11.6 | 14.7 | 14.2 | 15.1 | 13.9 | 13.3 |

Bold: Design value site for Louisville.

¹Year-to-date data for 2009.

* Cannons Lane replaced Barret in 2009. 2003-2008 data are from Barret.

24-Hour Standard:

The 24-Hour standard is designed to provide an appropriate level of protection from short-term exposures to PM_{2.5}. Table 4 compares data collected from 2003 through year-to-date 2009 to the 24-Hour National Ambient Air Quality Standard for PM_{2.5}. In December 2006 the EPA changed the 24-hour standard from 65µg/m³ to 35µg/m³. The standard is met when the 24-Hour design value is less than or equal to 35µg/m³. The design value is based on 3 consecutive, complete years of air quality data and is calculated by taking the average of the 98th percentile value for each of the 3 years. The 98th percentile is the daily value out of a year of PM_{2.5} monitoring data below which 98 percent of all daily values fall.

Table 4: PM_{2.5} Annual 98th Percentiles and 24-Hour Design Values

| Site Name | Annual 98 th Percentile Value. µg/m ³ | | | | | | | 24-Hour Design Values 2003-2005 | 24-Hour Design Values 2004-2006 | 24-Hour Design Values 2005-2007 | 24-Hour Design Values 2006-2008 | 24-Hour Design Values 2007-2009 |
|---------------|---|------|------|------|------|------|-------------------|------------------------------------|------------------------------------|------------------------------------|------------------------------------|------------------------------------|
| | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 ¹ | | | | | |
| Southwick | 36.3 | 31.1 | 42.9 | 36.0 | 34.1 | 28.7 | 24.3 | 36.8 | 36.7 | 37.7 | 32.9 | 29.0 |
| Wyandotte | 37.9 | 30.6 | 40.1 | 36.3 | 33.5 | 29.5 | 25.7 | 36.2 | 35.7 | 36.6 | 33.1 | 29.6 |
| Cannons Lane* | 35.5 | 28.8 | 43.2 | 36.7 | 31.9 | 30.7 | 24.1 | 35.8 | 36.2 | 37.3 | 33.1 | 28.9 |
| Watson Lane | 33.0 | 25.8 | 36.5 | 32.5 | 32.5 | 28.6 | 24.7 | 31.8 | 31.6 | 33.8 | 31.2 | 28.6 |

Bold: Design Value for Louisville.

¹Year-to-date data for 2009.

* Cannons Lane replaced Barret in 2009. 2003-2008 data are from Barret.